AMENDMENTS TO THE CLAIMS:

19. (Amended) A method of performing a fine frequency synchronization compensating for a carrier frequency deviation from an oscillator frequency in a multi-carrier demodulation system [of the type ]capable of carrying out a differential phase decoding of multi-carrier modulated signals, said signals comprising a plurality of symbols, each symbol being defined by phase differences between simultaneous carriers having different frequencies, said method comprising the steps of:

a) determining a phase difference between phases of the same carrier in different symbols;

b) determining a frequency offset by eliminating phase shift uncertainties related to the transmitted information from said phase difference making use of a M-PSK decision device; and

c) performing a feedback correction of said carrier frequency deviation based on said determined frequency offset.

20. (Amended) A method of performing a fine frequency synchronization compensating for a carrier frequency deviation from an oscillator frequency in a multi-carrier demodulation system [of the type ]capable of carrying out a differential phase decoding of multi-carrier modulated signals, said signals comprising a plurality of symbols, each symbol being defined by phase differences between simultaneous carriers having different frequencies, said method comprising the steps of:

a) determining respective phase of the same carrier in different symbols;

b) eliminating phase shift uncertainties related to the transmitted information from said phases to determine respective phase deviations making use of a M-PSK decision device;

c) determining a frequency offset by determining a phase difference between said phase deviations; and

d) performing a feedback correction of said carrier frequency deviation based on said determined frequency offset.

21. (Previously Presented) The method according to claim 19, wherein

said steps a) and b) are performed for a plurality of carriers in said symbols,

an averaged frequency offset is determined by averaging said determined frequency offsets of said plurality of carriers, and

said feedback correction of said frequency deviation is performed based on said averaged frequency offset in said step c).

22. (Previously Presented) The method according to claim 20, wherein

said steps a), b) and c) are performed for a plurality of carriers in said symbols,

an averaged frequency offset is determined by averaging said determined frequency offsets of said plurality of carriers, and

said feedback correction of said frequency deviation is performed based on said averaged frequency offset.

23. (Previously Presented) The method according to claim 19, wherein said step a) comprises the step of determining a phase difference between phases of the same carrier in symbols which are adjacent in the time axis direction.

24. (Previously Presented) The method according to claim 19, wherein said step b) comprises the step of eliminating phase shift uncertainties corresponding to M-ary phase shifts.

25. (Previously Presented) The method according to claim 20, wherein said step a) comprises the step of determining respective phases of the same carrier in symbols which are adjacent in the time axis direction.

26. (Previously Presented) The method according to claim 20, wherein said step b) comprises the step of eliminating M-ary phase shifts.

27. (Amended) An apparatus for performing a fine frequency synchronization compensating for a carrier frequency deviation from an oscillator frequency, for a multi-carrier demodulation system [of the type ]capable of carrying out a differential phase decoding of multi-carrier modulated signals, said signals comprising a plurality of symbols, each symbol being defined by phase differences between simultaneous carriers having different frequencies, said apparatus comprising:

means for determining a phase difference between phases of the same carrier in different symbols;

M-PSK decision device for determining a frequency offset by eliminating phase shift uncertainties related to the transmitted information from said phase difference; and

means for performing a feedback correction of said frequency deviation based on said determined frequency offset.

28. (Amended) An apparatus for performing a fine frequency synchronization compensating for a carrier frequency deviation from an oscillator frequency, for a multi-carrier demodulation system [of the type ]capable of carrying out a differential phase decoding of multi-carrier modulated signals, said signals comprising a plurality of symbols, each symbol being defined by phase differences between simultaneous carriers having different frequencies, said apparatus comprising:

means for determining respective phases of the same carrier in different symbols;

M-PSK decision device for eliminating phase shift uncertainties related to the transmitted information from said phases to determine respective phase deviations;

means for determining a frequency offset by determining a phase difference between said phase deviations;

means for performing a feedback correction of said frequency deviation based on said determined frequency offset.

29. (Previously Presented) The apparatus according to claim 27, further comprising:

means for determining an averaged frequency offset by averaging determined frequency offsets of a plurality of carriers, wherein

said means for performing a feedback correction performs said feedback correction of said frequency deviation based on said averaged frequency offset.

30. (Previously Presented) The apparatus according to claim 28, further comprising:

means for determining an averaged frequency offset by averaging determined frequency offsets of a plurality of carriers, wherein

said means for performing a feedback correction performs said feedback correction of said frequency deviation based on said averaged frequency offset.

31. (Previously Presented) The apparatus according to claim 27, wherein said means for determining a phase difference comprises means for determining a phase difference between phases of the same carrier in symbols which are adjacent in the time axis direction.

32. (Previously Presented) The apparatus according to claim 28, wherein said means for determining respective phases comprises means for determining respective phases of the same carrier in symbols which are adjacent in the time axis direction.

33. (Previously Presented) The apparatus according to claim 27, wherein said means for performing a feedback correction of said frequency deviation comprises a numerical controlled oscillator and a complex multiplier.

34. (Previously Presented) The apparatus according to claim 33, wherein said means for performing a feedback correction of said frequency deviation further comprises a low path filter preceding said numerical controlled oscillator.